Space Weather Forecast

Issued on Wednesday, 16 February 2022 at 00:58 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class X-ray flares and Minor (R1) Radio Blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate in the past 24 hours, with a Moderate-class x-ray flare observed at 15/1815 UTC from the largest and most magnetically complex region currently on the visible disc, AR2941, which is near the western limb. This was a long duration event, imagery will be monitored for evidence of a Coronal Mass Ejection (CME). Given its location any CME would unlikely be Earth-directed. There are currently six sunspots on the visible disk, though two remain unnumbered. The largest is about to rotate off the visible disk, though its flare risk will remain significant for a couple of days. AR2943 produced a Common class flare at 15/0518UTC. The remaining sunspots are all fairly small and simple magnetically. No Earth-directed CMEs were in evidence in available coronagraph imagery in the 24 hours.

Solar Wind / Geomagnetic Activity: Earth is currently undergoing a gradual exit from a 'coronal hole' fast wind, with the solar wind speed falling from slightly elevated levels to near background levels. The number of particles in the solar wind and their associated magnetic field were both unremarkable in the 24 hours. The net result of the above solar wind measures was Quiet throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed, despite the moderate-class X-ray flare from near the western solar horizon.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to carry a daily chance (30%) of Moderate-class flares - these most likely from the largest sunspot on the sun until day 2 (17th), at which point this risk should then gradually fall as it passes further onto the far side.

Solar Wind / Geomagnetic Activity: No CMEs feature in this forecast period. The solar wind is likely to continue to ease to background levels. Geomagnetic activity is likely to remain Quiet throughout the period.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, although there is a daily Slight Chance of S1, mainly up to day 2 (17th), before the crossing to the far side of the largest spot.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	25	20	5
Very Active	R3 to R5 X	No	2	2	2	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	2	2
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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